

ARCHIVES OF

Biochemistry and Biophysics

Volume 302
1993



ACADEMIC PRESS, INC.
Harcourt Brace & Company

San Diego New York Boston
London Sydney Tokyo Toronto

Copyright © 1993 by Academic Press, Inc.

All Rights Reserved

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

The appearance of the code at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use, or for the personal or internal use of specific clients. This consent is given on the condition, however, that the copier pay the stated per copy fee through the Copyright Clearance Center, Inc. (27 Congress Street, Salem, Massachusetts 01970), for copying beyond that permitted by Sections 107 or 108 of the U. S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. Copy fees for pre-1993 articles are as shown on the article title pages; if no fee code appears on the title page, the copy fee is the same as for current articles.

0003-9861/93 \$5.00

MADE IN THE UNITED STATES OF AMERICA

This journal is printed on acid-free paper.



CONTENTS OF VOLUME 302

Number 1, April 1993

PERSPECTIVES IN BIOCHEMISTRY AND BIOPHYSICS

Siderophores

J. B. Neilands 1

RESEARCH REPORT

Identification and Regulation of Rat Squalene Synthetase mRNA

R. Kennedy Keller, Andrew Cannons, Fequiere Vilsaint, Zhihong Zhao, and Gene C. Ness 304

BIOLOGICAL OXIDATIONS AND P450 REACTIONS

Effects of Radon Inhalation on Biological Function—Lipid Peroxide Level, Superoxide Dismutase Activity, and Membrane Fluidity *Kiyonori Yamaoka, Yoshiaki Komoto, Ichio Suzuka, Rei Edamatsu, and Akitane Mori* 37

Monoamine Metabolism Provides an Antioxidant Defense in the Brain against Oxidant- and Free Radical-Induced Damage *Jiankang Liu and Akitane Mori* 118

Combined Effects of Streptozotocin-Induced Diabetes Plus 4-Methylpyrazole Treatment on Rat Liver Cytochrome P4502E1 *Defeng Wu and Arthur I. Cederbaum* 175

Is Superoxide an Initiator of Microsomal Lipid Peroxidation?

Igor B. Afanas'ev, Anatolii I. Dorozhko, Natalia I. Polozova, Natalia S. Kuprianova, Aleksander V. Brodskii, Elena A. Ostrachovitch, and Ludmila G. Korkina 200

Measurement of Uric Acid as a Marker of Oxygen Tension in the Lung

Nabil M. Elsayed, James M. Nakashima, and Edward M. Postlethwait 228

Role of Oxygen and Carbon Radicals in Hemoglobin Oxidation

Maurizio Minetti, Cinzia Mallozzi, Giuseppe Scorza, Mark D. Scott, Frans A. Kuypers, and Bertram H. Lubin 233

Perturbation of Cell pH Regulation by H₂O₂ in Renal Epithelial Cells

Darren S. Kaufman, Michael S. Goligorsky, Edward P. Nord, and Mark L. Graber. With the assistance of Diane Hart, Carolyn Barry, M. A. Morgan, and Derek Rosner 245

Location of Conserved Residue Histidine-38 of the ϵ Subunit of *Escherichia coli* ATP Synthase

Eileen N. Skakoon and Stanley D. Dunn 272

Orientation of the ϵ Subunit in *Escherichia coli* ATP Synthase

Eileen N. Skakoon and Stanley D. Dunn 279

Generation of Free Radicals from Hydrogen Peroxide and Lipid Hydroperoxides in the Presence of Cr(III)

Xianglin Shi, N. S. Dalal, and Kazimierz S. Kasprzak 294

One-Electron Reduction of Vanadium(V) by Flavoenzymes/NADPH

Xianglin Shi and N. S. Dalal 300

BIOPHYSICAL CHEMISTRY AND X-RAY CRYSTALLOGRAPHY

Solid-State NMR Analysis of Crosslinking in Mussel Protein Glue

Susan M. Holl, Doug Hansen, J. Herbert Waite, and Jacob Schaefer 255

Molecular Dimensions and Properties of *N*-[1-(2-Hydroxyethyl)-2-nitro-1*H*-imidazol-1-yl]acetamide (SR2508)

Michael B. Dabrow, Henry Katz, Peter J. O'Dwyer, Carol Afshar, and Jenny P. Glusker 259

ENZYME STRUCTURE AND MECHANISMS; CELLULAR REGULATION; PHOSPHORYLATION AND DEPHOSPHORYLATION

Activity of Human DNA Polymerases α and β with 2-Chloro-2'-deoxyadenosine 5'-Triphosphate as a Substrate and Quantitative Effects of Incorporation on Chain Extension

Srinivas K. Chunduru, James R. Appleman, and Raymond L. Blakley 19

Phosphofructokinase from Liver of the Rainbow Trout, <i>Oncorhynchus mykiss</i>	Jeffrey Y. Su and Kenneth B. Storey	49
The Role of Protein Phosphatases 1 and 2A in Collagen-Platelet Interaction	Thomas M. Chiang	56
Cloning, Expression, and Sequence of an Allosteric Mutant ADPglucose Pyrophosphorylase from <i>Escherichia coli</i> B	Christopher R. Meyer, Paritosh Ghosh, Sam Nadler, and Jack Preiss	64
Inhibition of NAD(P)H:Quinone Acceptor Oxidoreductase by Flavones: A Structure-Activity Study	Shiuan Chen, Jason Hwang, and Paulis S. K. Deng	72
Stereoselective Interaction of 2-Halo-acyl-CoA Derivatives with Medium Chain Acyl-CoA Dehydrogenase from Pig Kidney	John G. Cummings and Colin Thorpe	85
Developmental Aspects of Glucocorticoid Regulation of Polycyclic Aromatic Hydrocarbon-Inducible Enzymes in Rat Liver	Mark W. Linder and Russell A. Prough	92
Nicotinamide Mononucleotide Adenylyltransferase Activity in Human Erythrocytes	Silvia Sestini, Carlo Ricci, Vanna Micheli, and Giuseppe Pompucci	206
Use of Trinitrobenzensulfonate for Affinity Labeling of Lysine Residues at Phosphate Binding Sites of Some Enzymes	Stefania Hanau, Franco Dallochio, and Mario Rippa	218
Homocysteine-Dependent Demethylation of Trimethylselenonium Ion and Selenobetaine with Methionine Formation	Douglas E. Goeger and Howard E. Ganther	222
Isopentenoid Synthesis in Eukaryotic Cells. An Initiating Role for Post-translational Control of 3-Hydroxy-3-methylglutaryl Coenzyme A Reductase	Maria D. Giron, Christopher M. Havel, and John A. Watson	265

GENE EXPRESSION, TRANSCRIPTION, AND TRANSLATION

Isolation and Characterization of a Differentiation-Dependent Gene in the Human Colonic Cell Line HT29-18	Maria M. Oliva, Tzyy-Chouu Wu, and Vincent W. Yang	183
---	--	-----

GLYCOCONJUGATES AND OLIGOSACCHARIDES; PROTEOGLYCANS AND EXTRACELLULAR MATRICES

Complete Assignment of ^1H and ^{13}C Nuclear Magnetic Resonance Chemical Shifts of β -1,2-Linked Mannooligosaccharides Isolated from the Phosphomannan of the Pathogenic Yeast <i>Candida albicans</i> NIH B-792 Strain	Nobuyuki Shibata, Kanehiko Hisamichi, Hidemitsu Kobayashi, and Shigeo Suzuki	113
Purification and Characterization of an α -L-Fucosidase from <i>Pomacea canaliculata</i>	Tamao Endo, Takako Tsukada, Masao Hiraiwa, Yutaka Uda, and Akira Kobata	152
Regional Differences in Sulfated Oligosaccharides of Rat Gastrointestinal Mucin as Detected by Two-Dimensional Chromatography	Yukunobu Goso and Kyoko Hotta	212
Purification and Characterization of Monkey (<i>Macaca nemestrina</i>) Tracheobronchial Mucin	Halagowder Devaraj, James W. Griffith, Mostafa Sheykhnazari, Bashoo Naziruddin, Goverdhan P. Sachdev, and V. P. Bhavanandan	285

LIPIDS, LIPID MEDIATORS, AND GLYCOLIPIDS

Vitamin A Inhibits Doxorubicin-Induced Membrane Lipid Peroxidation in Rat Tissues <i>in Vivo</i>	Marcello Ciaccio, Mario Valenza, Luisa Tesoriere, Antonino Bongiorno, Renato Albiero, and Maria A. Livrea	103
Identification of the Hydrophobic Ligand-Binding Region in Recombinant Glutathione S-Transferase P and Its Binding Effect on the Conformational State of the Enzyme	Jun Nishihira, Teruo Ishibashi, Masaharu Sakai, Sakae Tsuda, and Kunio Hikichi	128

MEMBRANE PROTEINS AND TRANSPORT; INTRACELLULAR SIGNALS; CYTOKINES AND RECEPTORS

Stimulation of Calcium Influx and Calcium Cascade by Cyclic AMP in Cultured Carrot Cells	Fumiya Kurosaki and Arasuke Nishi	144
Evidence for Unusual Stability of ADP-Ribosyl Linkage to Membrane Proteins of a Murine Leukemic Cell Line	Ken. Hanson, Nasreen Aboul-Ela, Myron K. Jacobson, and Ming-Chi Wu	193

PROTEIN STRUCTURE AND FUNCTION; PROTEASES, PROTEIN TURNOVER, AND POST-TRANSLATIONAL PROCESSING

- Nonheme Iron-Nitrosyl Complex Formation in Rat Hepatocytes: Detection by Electron Paramagnetic Resonance Spectroscopy
Josef Stadler, Hector A. Bergonia, Mauricio Di Silvio, Michael A. Sweetland, Timothy R. Billiar, Richard L. Simmons, and Jack R. Lancaster, Jr. 4
- Analysis and Modification of Thiols in the Hemolymph Juvenile Hormone Binding Protein of *Manduca sexta*
Yong Chul Park and Walter G. Goodman 12
- Fluorescent Responses of Acrylodan-Labeled Plasma Gelsolin
Scott W. Reid, Edward K. Koepf, and Leslie D. Burtnick 31
- Electron Microscopy Studies of α_2 -Macroglobulin Subunit Association after Limited Reduction with Dithiothreitol
Steven L. Gonias, Lela B. Marshall, Nancy L. Figler, Isa M. Hussaini, Mark D. Moncino, and Salvatore V. Pizzo 42
- The Binding of Cd(II) to the Hemocyanin of the Mediterranean Crab *Carcinus maenas*
Luigi Bubacco, Gian Paolo Rocco, Benedetto Salvato, and Mariano Beltramini 78
- Hydrophobic Affinity Chromatography of Human Thrombin
Roger L. Lundblad, Joyce Tsai, Hai-feng Wu, Joyce W. Jenzano, Gilbert C. White II, and Thomas M. Connolly 109
- Studies on Fibronectin and Its Domains. II. Secondary Structure and Spatial Configuration of Fibronectin and of Its Domains
Vlad Brumfeld and Moshe M. Werber 134
- Structure of D-Glyceraldehyde-3-phosphate Dehydrogenase from *Palinurus versicolor* Carrying the Fluorescent NAD Derivatives at 2.7 Å Resolution
Zheng-jiong Lin, Jun Li, Fa-ming Zhang, Shi-ying Song, Jing Yang, Shu-jian Liang, and Chen-lu Tsou 161
- Half-Life of Aryl Hydrocarbon Receptor in Hepa 1 Cells: Evidence for Ligand-Dependent Alterations in Cytosolic Receptor Levels
H. I. Swanson and G. H. Perdew 167

Number 2, May 1, 1993

PERSPECTIVES IN BIOCHEMISTRY AND BIOPHYSICS

- The Carnitine Acyltransferases and Their Role in Modulating Acyl-CoA Pools
Rona R. Ramsay and Arduino Arduini 307

RESEARCH REPORT

- Crystallization and Preliminary X-Ray Analysis of Subtilisin DY, a Natural Mutant of Subtilisin Carlsberg
Ch. Betzel, M. Visanji, S. Eschenburg, K. S. Wilson, K. Peters, S. Fittkau, T. P. Singh, and N. Genov 499

BIOLOGICAL OXIDATIONS AND P450 REACTIONS

- Characterization of Superoxide Dismutase-Insensitive Cytochrome c Reductase Activity in HL-60 Cytosol as NADPH-Cytochrome P450 Reductase
Yukio Nisimoto, Hidetsugu Otsuka-Murakami, Shouko Iwata, Yasuhiro Isogai, and Tetsutaro Iizuka 315
- Induction of Flavin-Containing Monooxygenase (FMO B) in Rabbit Lung and Kidney by Sex Steroids and Glucocorticoids
Min-Young Lee, Joan E. Clark, and David E. Williams 332
- Transcriptional Activation of Cytochrome P450 2B1/2 Genes in Rat Liver by Diallyl Sulfide, a Compound Derived from Garlic
Jinmei Pan, Jun-Yan Hong, Bing-Li Ma, Shu M. Ning, Shanthi R. Paranawithana, and Chung S. Yang 337
- Evaluation of 2',7'-Dichlorofluorescein and Dihydrorhodamine 123 as Fluorescent Probes for Intracellular H_2O_2 in Cultured Endothelial Cells
James A. Royall and Harry Ischiropoulos 348
- Dihydrolipoic Acid Prevents Hypoxic/Reoxygenation and Peroxidative Damage in Rat Heart Mitochondria
Barbara Scheer and Guido Zimmer 385

- Archaeobacterial Adenylate Kinase from the Thermoacidophile *Sulfolobus acidocaldarius*: Purification, Characterization, and Partial Sequence
Klaus Lacher and Günter Schäfer 391
- Dihydrolipoamide-Mediated Redox Cycling of Quinones
Žilvinas J. Anusevičius and Narimantas K. Čėnas 420
- Glyoxylate-Supported Reactions Catalyzed by Mn Peroxidase of *Phanerochaete chrysosporium*: Activity in the Absence of Added Hydrogen Peroxide
I-Ching Kuan and Ming Tien 447
- Myeloperoxidase-Dependent Loss of Malondialdehyde: A Limitation for Detecting Neutrophil-Mediated Lipid Peroxidation
Christine C. Winterbourn and Anitra C. Carr 461

BIOPHYSICAL CHEMISTRY AND X-RAY CRYSTALLOGRAPHY

- Crystallization and Preliminary X-Ray Crystallographic Analysis of Carboxylesterase from *Pseudomonas fluorescens*
Kyeong Kyu Kim, Kwang Yeon Hwang, Won Hee Jang, Hwanghee Lee, Ook Joon Yoo, Myung-Un Choi, and Se Won Suh 417

ENZYME STRUCTURE AND MECHANISMS; CELLULAR REGULATION; PHOSPHORYLATION AND DEPHOSPHORYLATION

- Purification and Characterization of Salicylhydroxamic Acid Reductase from Rat Liver
Hidemi Katsura, Shigeyuki Kitamura, and Kiyoshi Tatsumi 356
- Synthesis and Turnover of Ceruloplasmin in Rats Treated with 17 β -Estradiol
Rachel B. Middleton and Maria C. Linder 362
- Characterization of *cis*-Acting Regulatory Mutations Causing Anaerobic Expression of the *sodA* Gene in *Escherichia coli*
Steven W. Bowen and Hosni M. Hassan 372
- Domains of Rat Heme Oxygenase-2: The Amino Terminus and Histidine 151 Are Required for Heme Oxidation
William K. McCoubrey, Jr., and Mahin D. Maines. With the technical assistance of Molly A. Cooklis 402
- Lysine241 of Tyrosine Hydroxylase Is Not Required for Binding of Tetrahydrobiopterin Substrate
S. Colette Daubner and Paul F. Fitzpatrick 455

GENE EXPRESSION, TRANSCRIPTION, AND TRANSLATION

- Serum Protein of 135-kDa Molecular Weight—A Molecular Signal for Cardiac Hypertrophy
R. Prabhakar and C. Rajamanickam 425

GLYCOCONJUGATES AND OLIGOSACCHARIDES; PROTEOGLYCANS AND EXTRACELLULAR MATRICES

- Effects of Heparin and Other Glycosaminoglycans on Elastin Production by Cultured Neonatal Rat Lung Fibroblasts
Stephen E. McGowan, Rugao Liu, and Catherine S. Harvey 322
- Proteoglycan Metabolism Is Age Related and Modulated by Isoforms of Platelet-Derived Growth Factor in Bovine Articular Cartilage Explant Cultures
Steven J. Schafer, Frank P. Luyten, Masaki Yanagishita, and A. H. Reddi 431
- Rheological Effects of the Presence of Hyaluronic Acid in the Extracellular Media of Differentiated 3T3-L1 Preadipocyte Cultures
Juan Carlos Calvo, Amir H. Gandjbakhche, Ralph Nossal, Vincent C. Hascall, and Masaki Yanagishita 468

LIPIDS, LIPID MEDIATORS, AND GLYCOLIPIDS

- Nanomolar Concentrations of Prostaglandin E₁ Induce Changes in the Surface Organization of High-Density Lipoproteins
N. K. Golovanova, N. V. Medvedeva, A. M. Kameneva, A. D. Morozkin, and L. D. Bergelson 369
- Isolation of a Phospholipid Inhibitor of Platelet Activating Factor-Induced Activity from Perfused Rat Liver: Identification as Phosphatidylglycerol
Marilena Lekka, Akira Tokumura, Hideaki Tsuji, and Donald J. Hanahan 380

**MEMBRANE PROTEINS AND TRANSPORT; INTRACELLULAR SIGNALS;
CYTOKINES AND RECEPTORS**

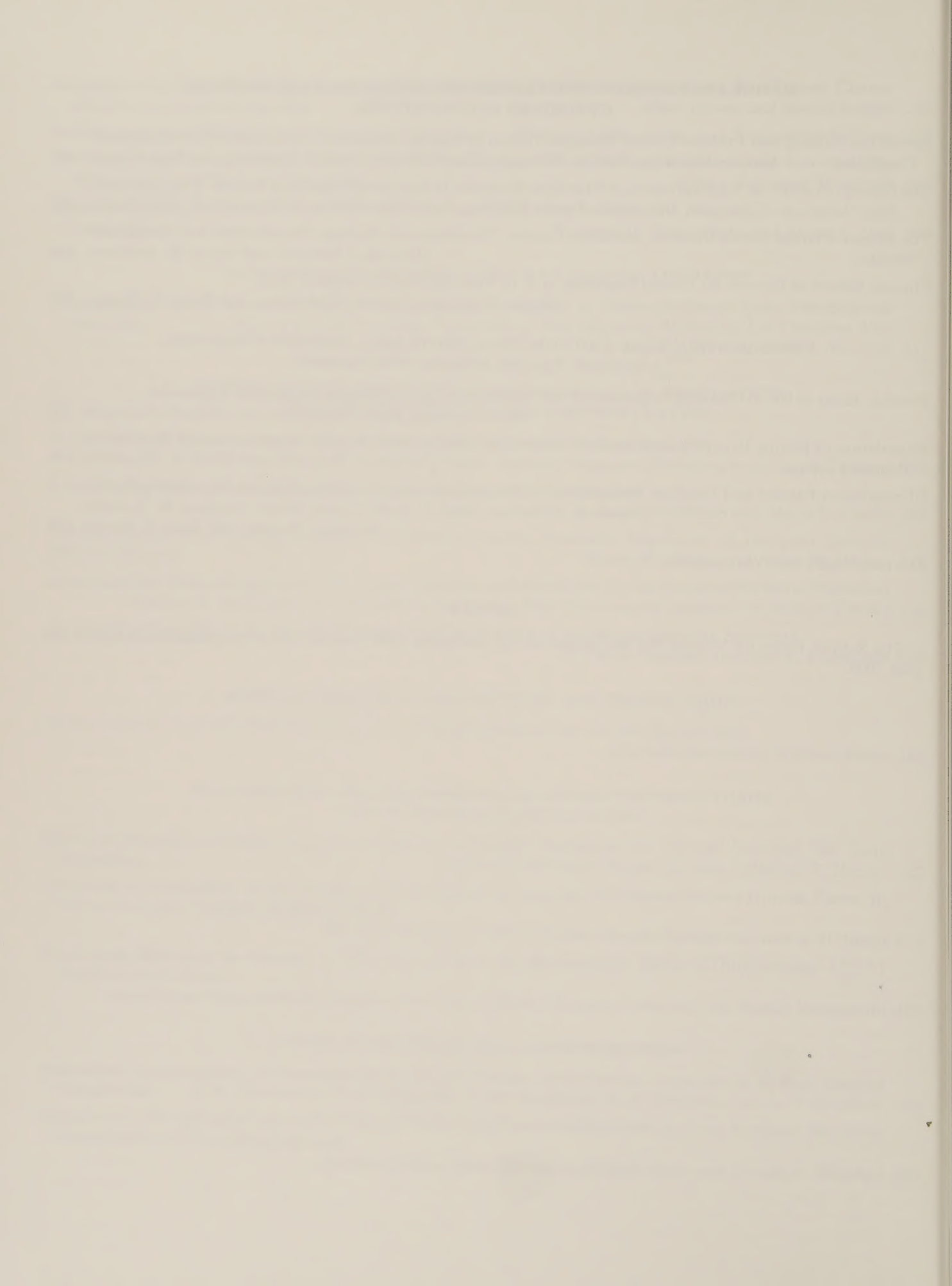
- Reversible Priming and Protein-Tyrosyl Phosphorylation in Human Peripheral Neutrophils under Hypotonic Conditions *Keisuke Edashige, Yoshiya Watanabe, Eisuke F. Sato, Yoshiki Takehara, and Kozo Utsumi* 343
- The Effects of cAMP on the Expression of Glycolytic Isozymes in Activated Peripheral Human T Lymphocytes *Snezana Marjanovic, Patrik Wollberg, Sven Skog, Thomas Heiden, and B. Dean Nelson* 398
- The Human Platelet Dense Granule: Serotonin Uptake, Tetrabenazine Binding, Phospholipid and Ganglioside Profiles *Diptendu Chatterjee and George M. Anderson* 439
- Chronic Effects of Glucose on Insulin Signaling in A-10 Vascular Smooth Muscle Cells *Denise R. Cooper, Asheena Khalakdina, and James E. Watson* 490

**PROTEIN STRUCTURE AND FUNCTION; PROTEASES, PROTEIN TURNOVER,
AND POST-TRANSLATIONAL PROCESSING**

- Possible Roles of the 3'-Flanking Sequences of the Human Activin β A Subunit Gene in Its Expression *Keiji Tanimoto, Kazuo Murakami, and Akiyoshi Fukamizu* 409
- Stimulation of Bovine Brain Phospholipase C Activity by Myelin Basic Protein Requires Arginyl Residues in Peptide Linkage *Thomas A. Tompkins and Mario A. Moscarello* 476
- Glycosylation Pattern and Disulfide Assignments of Recombinant Human Differentiation-Stimulating Factor *Charles H. Schmelzer, Reed J. Harris, Daniel Butler, Cathleen M. Yedinak, Karen L. Wagner, and Louis E. Burton* 484
- AUTHOR INDEX FOR VOLUME 302 503

NOTICE

The Subject Index for Volume 302 will appear in the December 1993 issue as part of a cumulative index for the year 1993.



Archives of BIOCHEMISTRY AND BIOPHYSICS is an international journal dedicated to the dissemination of fundamental knowledge in all areas of biochemistry and biophysics. **Research Reports** and **regular manuscripts** that contain new and significant information of general interest to workers in these fields are welcome. Sufficient detail must be included to enable others to repeat the work.

Research Reports provide a mechanism for rapid publication of short but complete manuscripts on outstanding and novel research findings. They should consist of 1000 or fewer words of text and a total of six or fewer figures and tables. The first paragraph should describe, without abbreviations, the background, rationale, principal findings, and conclusions of the study. Experimental methods should be reported in the table or figure legends, not in the text. Acknowledgments may be included in a footnote to the title. Omit the abstract and text subheadings, and keep literature citations to a reasonable minimum. The scientific quality of these reports should be of the highest caliber to facilitate rapid review. Authors should identify the manuscript as a Research Report and submit it directly to the Editorial Office of the journal (see below).

Accelerated status may also be given to those manuscripts that are reviewed as outstanding and that require little or no revision. At submission, authors may request accelerated publication of their manuscript. To expedite publication of such articles, authors will not receive proofs.

Manuscripts should be written in clear, concise, and grammatical English and should be submitted in quadruplicate (one original and three photocopies), including four sets of original figures or good quality glossy prints, to:

Archives of BIOCHEMISTRY AND BIOPHYSICS

Editorial Office, Third Floor, 1250 Sixth Avenue
San Diego, California 92101

Failure to receive the required number of copies of the manuscript may delay review. All copies of halftone artwork *must* be glossy prints or originals; photocopies of halftones do not show sufficient detail to be used for the review process. *In the case of rejected manuscripts only one copy of the manuscript will be returned to the author.*

For nucleotide sequence data authors are encouraged to submit original nucleotide or amino acid sequence data to a databank such as GenBank or EMBL. A footnote that includes the accession number should be included on the title page. It is preferable that the sequence data be deposited either prior to submission or by the time of acceptance of the manuscript. However, a footnote can be added at the proof stage if the material is deposited after acceptance. For further information

please contact the editorial office or GenBank or EMBL directly.

Policy regarding publication of experiments on unanesthetized animals conforms with the standards for use of laboratory animals established by the Institute of Laboratory Animal Resources, U.S. National Academy of Sciences. Experiments in which curariform agents are used must be justified and details of the steps taken to reduce or avoid distress to the animal must be provided, particularly with regard to electrical stimulation.

Original papers only will be considered. ***Manuscripts are accepted for review with the understanding that the same work has not been published, that it is not under consideration for publication elsewhere, and that its submission for publication has been approved by all of the authors and by the institution where the work was carried out. It is the responsibility of the corresponding author to obtain the agreement of all the coauthors of the manuscript prior to its submission to the journal.*** Abstracts of oral or poster presentations are not considered to constitute previous publication. Presentation of material in preliminary communications normally will not preclude publication of a full paper in **Archives**, provided that the full paper contains additional information that justifies its publication and does not repeat the presentation of the same data that supported the preliminary communication. The manuscript should be accompanied by copies of all preliminary communications and of all relevant manuscripts that are in press or under editorial consideration by another journal. Authors must verify the wording of any cited personal communication with the persons who supplied the information and obtain approval for the use of their names in connection with the quoted information or for the citation of unpublished work; written evidence of such approval should accompany the manuscript. All material published in **Archives** represents the opinions of the authors and should not be construed to reflect the opinions of the Editors or the Publisher.

Authors should suggest competent reviewers in their field and may also suggest individuals whom they wish to have excluded from the review process. The corresponding author will receive a decision letter from the Executive Editor. Revised manuscripts and correspondence concerning such manuscripts should be sent to the Executive Editor at the address indicated on the decision letter. Revised manuscripts should be accompanied by a copy of the unrevised version.

Many acceptable papers require minor revision or condensation. It is in the mutual interest of both the authors and the journal that amended manuscripts be returned promptly. A revised paper will retain its original date of receipt only if it is received by the Executive Editor within 2 months of the date of return to the author.

Authors submitting a manuscript do so on the understanding that if it is accepted for publication, copyright in the article, including the right to reproduce the article in all forms and media, shall be assigned exclusively to the Publisher. The Publisher will not refuse any reasonable request by the author for permission to reproduce any of his or her contributions to the journal.

¹ An extended Instructions to Authors is published in the January issue of **Archives of BIOCHEMISTRY AND BIOPHYSICS**. Reprints are available from the Editorial Office upon request. Authors should consult the extended Instructions for details on nomenclature, IUPAC-IUBMB rules and recommendations, and accepted abbreviations.

Form of manuscript. Manuscripts should be typewritten and double-spaced throughout on one side of $8\frac{1}{2} \times 11$ -in. white paper, with 1-in. margins on all sides. All pages should be numbered consecutively.

Subject Areas. Authors should specify on page 1 of the manuscript the Subject Area of the article submitted:

Biological Oxidations and P450 Reactions

Glycoconjugates and Oligosaccharides; Proteoglycans and Extracellular Matrices

Lipids, Lipid Mediators, and Glycolipids

Biophysical Chemistry and X-Ray Crystallography

Membrane Proteins and Transport; Intracellular Signals; Cytokines and Receptors

Enzyme Structure and Mechanisms; Cellular Regulation; Phosphorylation and Dephosphorylation

Plant Biochemistry and Molecular Biology

Protein Structure and Function; Proteases, Protein Turnover, and Post-translational Processing

Gene Expression, Transcription, and Translation

Page 1 should contain the article title, author(s), affiliation(s), a short running title (abbreviated form of title) of less than 65 characters including letters and spaces, the appropriate subject category for listing in the Table of Contents, suggestions for index list entries, and the name, complete mailing address, and telephone and fax numbers of the person to whom correspondence should be sent.

Page 2 should contain a short abstract of 50–250 words.

Editorial style should conform to the *Handbook for Authors* (American Chemical Society).

Footnotes to the text should be identified by superscript Arabic numerals and should be typed double-spaced on a separate sheet: footnotes to tables should be identified by superscript lowercase italic letters (^a, ^b, etc.) and placed at the bottom of the table.

Tables should be numbered with Roman numerals and cited consecutively in the text. Each table should be titled and typed double-spaced on a separate sheet. Units must be clearly indicated for each of the entries in the table.

Authors can submit complex tables and mathematical material as camera-ready copy. In this way, they are spared multiple, tedious proofreadings and the chance of error is reduced. Tables submitted as camera-ready copy should be typed single-spaced whenever possible and preferably submitted as 5×7 -in. glossy prints.

Figures should be cited consecutively in the text by Arabic numerals. Legends should be typed double-spaced on a separate sheet. All figures and illustrations are to be submitted in such form as to permit photographic reproduction without retouching or redrawing. They should be planned to fit the proportion of the printed page ($7\frac{1}{8} \times 9$ in.; column width, $3\frac{1}{2}$ in.) and submitted no larger than $8\frac{1}{2} \times 11$ in. Lettering on drawings should be of professional quality or generated by high-resolution computer graphics and should be large enough (10–12 points) to take a reduction of 50–60%. Drawings should be made with black India ink on tracing linen, smooth-surface white paper, or Bristol board. Alternatively, high-quality computer graphics may be acceptable. Graph paper, if used, should be ruled in blue. Glossy prints of figures properly prepared are acceptable. Illustrations in color can be accepted only if the authors defray the cost.

Cover photographs. Suggestions for cover photographs are welcome. Submit them as slides with $8\frac{1}{2} \times 11$ -in. color or black-

and-white prints to accompany specific articles. A short (one-line) legend should accompany each photograph.

References should be cited in the text by an Arabic numeral in parentheses and listed at the end of the paper in numerical order typed double-spaced on a separate sheet. Abbreviations of journal titles should conform to those of the most recent edition of *Chemical Abstracts Service Source Index*. Please note the following examples.

1. Gemzik, B., Green, J., and Parkinson, A. (1992) *Arch. Biochem. Biophys.* **296**, 355–365.
2. Stein, W. D. (1986) *Transport and Diffusion across Cell Membranes*, Academic Press, San Diego.
3. Compton, T. (1990) in *PCR Protocols: A Guide to Methods and Applications* (Innis, M. A., Gelfand, D. H., Sninsky, J. J., and White, T. J., Eds.), pp. 39–45, Academic Press, San Diego.

Miniprint supplements are an effective way of presenting supportive data. They are printed from plates made by photographic reduction from typed pages provided by the author. Types of data that have been published as miniprint supplements include analyses relevant to studies of amino acid or polynucleotide sequences, details of chemical syntheses, preparation of enzymes, extended statistical or mathematical discussions, and X-ray diffraction data. The miniprint supplement is published in the journal, immediately following the parent paper, and is included in the reprints. Since the miniprint supplement is produced from camera-ready copy supplied by the authors with no redaction or editorial changes it is important that the copy be letter perfect and conform to the style of the journal. *Authors will not be permitted to make changes to the miniprint supplement at the proof stage. Any changes necessary in the proof must be made as a typeset "Note added in proof."*

Proofs will be sent to the author, with a reprint order form. Authors will be charged for extensive alterations.

Reprints. Fifty reprints of each article will be provided free of charge. Additional reprints may be purchased.

Personal computer disks. Manuscripts may be submitted to **Archives of BIOCHEMISTRY AND BIOPHYSICS** on personal computer disks after the manuscript has been accepted and after all revisions have been incorporated onto the disk. Label the disk with the type of computer used, the type of software and the version number, and the disk format. All tabular material will be typeset conventionally. Art must be prepared as camera-ready copy; see the section on Figures earlier in these Instructions to Authors.

A hard copy printout of the manuscript that exactly matches the disk file must be supplied. Academic Press will not accept disks without accompanying printouts of all files on the disk. File names must clearly indicate the content of each file. The manuscript will be edited according to the style of the journal, and the proofs must be read carefully by the author. Disks that are not translatable or economical to process will not be used. The publisher reserves the right not to use the disk.

For further information on preparing the disk for typesetting conversion, please contact the publisher (Editorial Supervisor, Journal Division, Academic Press, 1250 Sixth Avenue, San Diego, California 92101; telephone: (619) 699-6415; fax: (619) 699-6800).

The Natural Selection

New

Molecular Phylogenetics and Evolution

*A Forum
for Molecular
Studies that
Advance Our
Understanding
of Phylogeny
and Evolution*

Editor-in-Chief

Morris Goodman, *Wayne State University School of Medicine, Detroit, Michigan*



MOLECULAR PHYLOGENETICS AND

EVOLUTION will publish the results of molecular studies that identify the actual clades to which different species and higher taxa belong. Such knowledge will further the development of phylogenetically more accurate taxonomic classifications and ultimately lead to a unified classification for all the ramifying lines of life.

*This new journal is
dedicated to bringing
Darwin's theory within
grasp - to "have fairly
true genealogical trees
of each great kingdom
of nature."*

MOLECULAR PHYLOGENETICS AND EVOLUTION publishes high-quality papers that result from or encourage the collaboration of molecular biologists and computer scientists with the community of systematic and evolutionary biologists.

Volume 2 (1993), 4 issues ISSN 1055-7903
In the U.S.A. and Canada: \$148.00 All other countries: \$179.00

For further information, please contact the Publisher:

ACADEMIC PRESS, INC.

Journal Promotion Department
1250 Sixth Avenue
San Diego, California 92101, U.S.A.
(619) 699-6742

Manuscripts may be submitted to:

Molecular Phylogenetics and Evolution

Editorial Office, 7th Floor
1250 Sixth Avenue
San Diego, California 92101, U.S.A.



Pesticide Biochemistry and Physiology

An International Journal

Editor

Fumio Matsumura

University of California, Davis

Pesticide Biochemistry and Physiology publishes original scientific articles pertaining to the mode of action of plant protection agents such as insecticides, fungicides, herbicides, and similar compounds including nonlethal pest control agents, biosynthesis of pheromones, hormones, and plant resistance agents. Manuscripts may include a biochemical, physiological, or molecular study for an understanding of comparative toxicology or selective toxicity of both target and nontarget organisms.

Research Areas Emphasized Include the Biochemistry and Physiology of

- Comparative toxicity
- Metabolic effects
- Mode of action
- Pathophysiology
- Plant growth regulators
- Resistance
- Other effects of pesticides on both parasites and hosts

Volumes 45 – 47 (1993), 9 issues ISSN 0048-3575 In the U.S.A. and Canada: \$378.00 All other countries: \$461.00

*Sample copies and privileged personal rates are available upon request.
For more information, please write or call:*

ACADEMIC PRESS, INC., Journal Promotion Department
1250 Sixth Avenue, San Diego, CA 92101, U.S.A.
(619) 699-6742



All prices are in U.S. dollars and are subject to change without notice.
Canadian customers: Please add 7% Goods and Services Tax to your order.